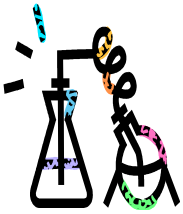


*****IN ORDER TO HOLD YOUR SPACE…**
Sign up for the Fair online at http://edisonextraenrichment.weebly.com/
AND…**Please complete the Project Summary at the end of this packet, and return it to you teacher on or before Friday, November 13**

Science Fair Project Guide

Edison Elementary School
Science Fair…November 20, 2015

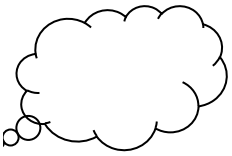
All Edison students are invited to participate in the Science Fair on Friday, November 20, 2015. In preparation for the Science Fair, each student can design a project, with the help of parents, to present at the fair. Students may work individually, with a small group, or with the class to develop a project. The information in this guide should answer any questions you may have on this fun and educational process.

What is a science fair?

A science fair is an event where students showcase the science projects they have done. Science fairs provide wonderful opportunities for our students to creatively explore an area that interests them—to expand their thinking beyond the classroom, satisfy their curiosity with self-driven experiments and research, and communicate their findings to others. The feedback they receive from the judges is an integral part of the STEM process in which they revise their work and create new questions for their research focus.

Project Guidelines…

• Where do I start?



Thinking of your science fair project can be fun and challenging. First, think of an area that interests you or that you are curious about. You will be spending some time working on your project so make sure that it is something YOU want to do. Depending on grade level, I encourage slightly different types of projects. An "Informational Project" is great for younger students. An informational project would explain or show a student's area of scientific expertise. Examples include "The Five Senses," "Planets of our Solar System," or "Dinosaurs of the Jurassic". However, what is really fun when doing a science fair project is to ask a question that leads to an experiment. This process of answering questions by creating an experiment that really narrows down cause and effect is called "The Scientific Method." This, and the ability to change variables in the experiment to change or improve the outcome is what science is all about!

Some examples of how to change an informational project into one that asks (and hopefully answers) a question are: "Which of the five senses is used most?", "What foods attract the most ants?", "Which bubble solution creates the longest lasting bubbles?" "Do different oils affect the pop rate in popcorn?" Now some of those questions are a bit tough, but hopefully you can see the difference between an informational project and one that explores a question under an experimental situation.

• How do you get answers to your scientific question? (The Scientific Process)

The Scientific Process; Does it sound a little scary? Well, it's not. It's just the way that scientists get from asking a question to finding an answer about how things in our world work. Here's a short outline of how it works: 1) Ask your question; 2) Make a guess-- prediction (also known as hypothesis); 3) Take a look with experiments—observations; 4) Write down observations—data; 5) Make a picture of what you observed—charts, graphs, tables, or photographs; 6) Decide what it means – conclusions or claims; 7) What are your next steps to further your research?

• Pick your project!

Ask a question! This is probably going to be the title of your science fair project. Ask a question that leads to an experiment. Remember that an experiment compares things. It is important to ask the question in a way that you can compare or measure things to get an answer. For example, suppose you have asked the question, "What will make radishes grow the biggest?" Well, then you need to think for a minute about what 'biggest' means. Did you mean the heaviest? The longest? The largest circumference? You might need to work on your question and ask it a few different ways before you figure out the best way to ask it so that it leads to a measurable answer.

• Research your topic!

Next you need to research your topic. Find out as much as you can about your topic. Read books about it, find magazines or newspapers, talk to people you know, do online searches to help you find more information. If there is a TV documentary on Discovery Kids channel on your topic, watch it and pay attention to where they got their information. Suppose your project is "Which paper towel really has the most absorbing ability?" It would be a good idea to do some research on how paper towels are made. If you are a 5th grader, you could really get a lot of information about your topic.

If you are in Kindergarten and you are really interested in dinosaurs, you could do research by going to the Denver Museum of Nature and Science to see Prehistoric Journey or visit Dinosaur Ridge. Talk to the guides at the museums to find out more information. Take pictures of dinosaurs to present how they were the same and different.

• State your Hypothesis!

Since you've done a bit of research, you probably have some ideas about how your experiment will turn out. Make a guess and write it down. State your hypothesis in a way you can measure it.

• Do your experiments!

Now you need to check your hypothesis to see if it is correct or not. (A little sneaky hint here: being wrong is ok…sometimes it's easier to check it that way) Set up your experiment so that you are changing only one thing-a variable, and the rest of the experiment stays the same. The 'thing' you change is called your independent variable because you are varying or changing it. Suppose you are doing "Raisin Elevators" for your project, using raisins and carbonated soda pop, and you want to compare how different types of soda pop affect the floating of raisins. To do the experiment in a scientific way, you will need to make sure that you have exactly the same amount of soda in each cup, that each cup is the same as the other cups, and that you put the same number of raisins in each cup-these are controlled variables. The only thing you change is the type of soda; Coke in one, Sprite in another, Sierra Mist, etc. Your independent variable is the kind of soda pop you use in the experiment. The dependent variable is how high the raisins float in each kind of soda pop. Make sure other variables stay the same as much as possible and **try the same experiment many times to see if the results are consistent.**

• Gather your results!

Record the results of your experiments using charts, graphs, photographs, or measurements. Feel free to record your data in more than one way.

• Draw your conclusions-Make your claims!

What happened with your experiment? Did it turn out the way you thought it would or were you surprised? What did you learn? Write it down. It doesn't have to be long. Just think about it and state it in a clear way. For example, suppose you did a project on soil erosion where you asked the question, "How do landslides happen?" Your hypothesis might have been: I think landslides occur on hills and mountains when prolonged rain follows a long period of dry weather. For your experiment make 6 containers of soil or sand built into the same sand castle shape and then pour varying amounts of water on each (Perhaps 1/4 cup of water on the first, then 1/2 cup, then 3/4 cup, up to 1 1/2 cups on the last one). Suppose you saw that the soil could hold up with the smaller amounts but not the larger amounts, then your conclusion might be stated as: "My hypothesis was correct. I thought that large amounts of rain would cause landslides and when there was a lot of water it did cause the sand hill to slide." Finally, does this experiment and conclusion lead to more questions or push you to do further research? Be sure to add this to your conclusion.

Judging

Based on your knowledge and learning as presented on your display board, you should be prepared to briefly discuss your project with judges and answer questions about it. For the Edison Science Fair, judges will record and comment on student knowledge of the project and presentation-using a score sheet similar to that used For the DPS District Science Fair Committee. All participants will receive special recognition, and **two <u>experimental design projects</u> from each grade level will be recommended to participate in Denver Public Schools' Science Fair January 30, 2016, held at University of Denver!**

Judges will ask questions focused on the components of each project-all the pieces on your display. Through discussion with each young scientist, judges will record and make comments based on: clarity of the project, student knowledge, research and evidence of student generated work. Please see the rubric and score sheet attached at the end of this packet as a guide to discussion.

All judges are excited to hear all about your learning! Here are items the judges may ask you to discuss:

Experimental projects-

-What made you decide on this project?
-Does your title clearly define your project?
-Is your project 'question' stated clearly and did you explain how your testing went?
-Does your hypothesis show a relationship between the variables?
-Do you have a detailed, step by step procedure listed and can you explain it?
-Are your data table(s), graph(s), and other representations of data accurate, easily understood, and complete: including title, labels, placement of variables, and use of correct units of measurement?
-Does your discussion clearly summarize the results?
-Does your conclusion include an explanation that connects the results to scientific knowledge and your learning?
-What are your 'next steps' based on your learning from this project?
-Who helped you with your project?
-What did you enjoy most about your research and experimentation?

Informational Projects: these projects will not go on to Denver's District Fair-

-What made you decide on this topic?
-What was the most important learning you gained from researching this topic?
-How does this learning tie into our/your world?
-I am curious about…please tell me more.
-What questions did this project raise?
-What further research will you do?

Experiment Safety Guidelines

Many experiments have safety risks which must be identified and addressed by parents before the experiment. Projects should be the work of individual students and be monitored by a parent. Please follow these guidelines in picking your project:

• No animal or human experiments may be performed that are harmful to the animal or person.
• Parents must carefully monitor any experiments that are performed as part of a project.
• Parents are responsible for ensuring that proper safeguards are in place for any hazardous chemicals, electrical or mechanical equipment, open flames, cultures, or other hazards that may exist at home.

Exhibit Guidelines

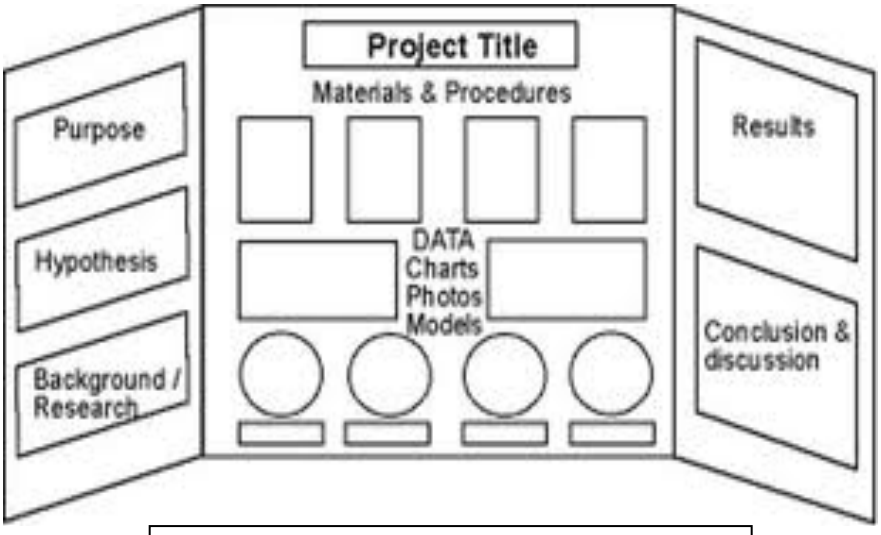
At the science fair, you will be allocated space at a table on which to place your exhibit-look for your name placard. All experiments must be performed at home; no experiments are to be performed at the school. To make the science fair a safe and fun experience for all who will be attending, please follow these guidelines in creating an exhibit to bring to the fair:

• Include your project title, name, and class on a tri-fold display board. See the example below…
• Your display must fit within the allocated space of 36 inches wide and 15 inches deep. The display board must stand on its own.
• In addition to the display board, other materials such as papers, reports, and dioramas may be included.
• Animals, cultures, electrical equipment, hazardous chemicals, or heat sources may **not** be brought to the fair. Use photographs you've taken while experimenting at home.
• **Parents must supervise children at all times during the evening of the fair.**

Experimental Project Board Components… see to the right.

Informational Project Boards should look similar but with photos, writing, important points and interesting facts.

15" x 36" maximum size for any board and must STAND ON ITS OWN!



The project board must STAND ON ITS OWN!

Edison's Science Fair Schedule

Friday, November 20, 2015

8:00am	Setup by Participants
9:00-12:00 noon	Judges view projects and talk with participants by grade level
12:30-3:00pm	Classrooms visit the fair, some participants will discuss projects
400-6:00pm	Edison Families and Community may visit the fair. All children must be accompanied by an adult during this time.

On the day of the fair, all student participants and their parents must arrive and set up their project boards between 8:00-8:30 am.

Each participating student will be asked to present their project to a judge in the morning.

Grade levels will be called from class as judges are ready. Participants may be asked to stay with their projects for a small part of the afternoon to talk with visiting classrooms.

All projects must be taken home Friday at 6:00pm.

Additional References…

Science Fair Project Ideas

Does temperature affect the rate at which seeds sprout?
Do different amounts of light affect the rate at which seeds sprout?
How to generate enough static electricity to create sparks
What shape of parachute carries the most weight?
Which food attracts the most ants?
Which fruit battery will create more electricity?

Science Fair References

http://curriculum.dpsk12.org/math_science/science/fair/display.html
http://school.discoveryeducation.com/sciencefaircentral/
http://sciencebuddies.com
http://www.stevespangler.com/
www.http:/easy-kids-science-experiments.com
http://www.sciencekids.co.nz/experiments.html
http://www.sciencebob.com/experiments/

Many of the above sites will reference additional sites as well!
You may Google "science fair projects for elementary students" for more ideas, or visit youtube!

Have fun, learn lots!

Edison's Science Fair: Project Summary Form

This form must be filled out and signed by the student and a parent/guardian, and returned to class by **Friday, November 13, 2015**…paper/pencil please!!

Please contact your child's teacher, Cindy Stroschein (Cindy_Strochein-Lucas@dpsk12.org), or Emily Pitman (Emily_pitman@dpsk12.org) with any questions.

Student Name: _____

Classroom Teacher: _____ room # _____

Project Title: _____

_____

Briefly describe your project. Circle one… Experimental Research

_____

_____

_____

_____

_____

Student Signature: _____Date:_____

Parent/Guardian Signature: _____

Phone Number_____ Email: _____

This box reserved for Committee use.

_____

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